IN THE CLAIMS

1. (Currently Amended) An apparatus comprising:

a sensing means for sensing a sample surface based on an amplitude variation in a resonant frequency of the sensing means by keeping a uniform distance from the sample which is moving in X and Y directions;

a frequency transforming means for transforming the sensed signal in the sensing means to a first signal in the form of frequency;

a frequency combining means for combining the first signal and a second signal outputted from a frequency generator to generate a combined signal, wherein the second signal is identical to the resonant frequency and is a higher frequency compared to the first signal; and

a single actuator for actuating the sensing means in response to the first signal which is a low frequency compared to the second signal and providing the combined signal to the sensing means to actuate the sensing means selectively at the second signal, the single actuator to oscillate a cantilever coupled to the single actuator with the second signal that is separated from the combined signal,

wherein the apparatus scans the sample surface in a non-contact mode<u>, and the actuating means functions as a low pass filter by responding to the first signal</u>.

2. (Original) The apparatus as recited in claim 1, wherein the sensing means measures amplitude variation of the resonant frequency which is proportional to a displacement of a gap from the sample, while the sensing means are keeping a uniform distance from the sample through the use of the actuating means which is driven in a Z direction responding to the first signal.

3. (Canceled)

4. (Previously Presented) The apparatus as recited in claim 1, wherein the sensing means includes:

a tip which is mounted at a distal end of the cantilever for tracking the sample surface; and

a sensing unit which is attached to a predetermined area of the cantilever for sensing the sample surface.

5. (Original) The apparatus as recited in claim 4, wherein the tip has a probe and is used for an atomic force microscope.

6. (Original) The apparatus in recited as claim 4, wherein the tip has an aperture and is used for a near field scanning optical microscope.

7. (Original) The apparatus as recited in claim 1, wherein the sample is moving in the X and Y directions by a X-Y scanner disposed under the sample.

8. (Currently Amended) The apparatus as recited in claim 1, wherein the single actuator is one selected among a ~~Piezo~~ piezo actuator, a bimorph actuator, and a voice coil motor.

9. (Currently Amended) A method comprising:

scanning a sample surface using a non-contact frequency response separation scheme, said frequency response separation scheme including:

sensing the sample surface based on the amplitude variation of a resonant frequency of a sensing means by keeping a uniform distance from the sample which is moving in X and Y directions;

transforming the sensed signal to a first signal in a form of frequency;

combining the first signal and a second signal outputted from a frequency generator to generate combined signal, wherein the second signal is identical to a resonant signal and is a higher frequency compared to the first signal;

transferring the combined signal to a single actuator through a feedback loop; and

actuating a cantilever in the sensing means in response to the first signal which is a low frequency compared to the second signal and executing the frequency response separation by providing the combined signal to the sensing means to actuate the cantilever selectively at the second signal, wherein actuating the cantilever functions as a low pass filter by responding to the first signal.

10. (New) An apparatus comprising:

a sensing means for sensing a sample surface based on an amplitude variation in a resonant frequency of the sensing means by keeping a uniform distance from the sample which is moving in X and Y directions;

a frequency transforming means for transforming the sensed signal in the sensing means to a first signal in the form of frequency;

a frequency combining means for combining the first signal and a second signal outputted from a frequency generator to generate a combined signal, wherein the second signal is identical to the resonant frequency and is a higher frequency compared to the first signal; and

a single actuator for actuating the sensing means in response to the first signal which is a low frequency compared to the second signal and providing the combined signal to the sensing means to actuate the sensing means selectively at the second signal, the single actuator to oscillate a cantilever coupled to the single actuator with the second signal that is separated from the combined signal,

wherein the apparatus scans the sample surface in a non-contact mode, and the sensing means includes:

a tip which is mounted at a distal end of the cantilever for tracking the sample surface; and

a sensing unit which is attached to a predetermined area of the cantilever for sensing the sample surface.

11. (New) The apparatus as recited in claim 10, wherein the sensing means measures amplitude variation of the resonant frequency which is proportional to a displacement of a gap from the sample, while the sensing means are keeping a uniform distance from the

sample through the use of the actuating means which is driven in a Z direction responding to the first signal.

12. (New) The apparatus as recited in claim 10, wherein the actuating means functions as a low pass filter by responding to the first signal.

13. (New) The apparatus as recited in claim 12, wherein the tip has a probe and is used for an atomic force microscope.

14. (New) The apparatus in recited as claim 12, wherein the tip has an aperture and is used for a near field scanning optical microscope.

15. (New) The apparatus as recited in claim 10, wherein the sample is moving in the X and Y directions by a X-Y scanner disposed under the sample.

16. (New) The apparatus as recited in claim 10, wherein the single actuator is one selected among a piezo actuator, a bimorph actuator, and a voice coil motor.